

Amendments to the Specification:

[0031] The drives and their associated computer storage media, discussed above and illustrated in Figure 1, provide storage of computer readable instructions, data structures, program modules and other data for the computer 110. In Figure 1, for example, hard disk drive 141 is illustrated as storing operating system 144, application programs 145, other program modules 146, and program data 147. Note that these components can either be the same as or different from operating system 134, application programs 135, other program modules 136, and program data 137. Operating system 144, application programs 145, other program modules 146, and program data 147 are given different numbers here to illustrate that, at a minimum, they are different copies. A user may enter commands and information into the computer 110 through input devices such as a keyboard 162 and pointing device 161, commonly referred to as a mouse, trackball or touch pad. Other input devices (not shown) may include a microphone, joystick, game pad, satellite dish, scanner, or the like. These and other input devices are often connected to the processing unit 120 through a user input interface 160 that is coupled to the system bus, but may be connected by other interface and bus structures, such as a parallel port, game port or a universal serial bus (USB). A monitor 191 or other type of display device is also connected to the system bus 121 via an interface, such as a video interface 190. In addition to the monitor, computers may also include other peripheral output devices such as speakers 197 and printer 196, which may be connected through an output peripheral interface 195 ~~190~~.

[0034] Computer environment 100, described above, can be deployed as part of a computer network. In general, the above description for computers applies to both server computers and client computers deployed in a network environment. Figure 2 illustrates an exemplary network environment, with a server in communication with client computers via a network, in which the present invention may be employed. As shown in Figure 2, a number of servers 10a, 10b, ~~etc.~~, are interconnected via a communications network 14 (which may be a LAN, WAN, intranet, the Internet, or other computer network) with a number of client computers 110a, 110b, 110c, ~~20a, 20b, 20c~~, or computing devices, such as, mobile phone 15, land-line telephone 16, and personal digital assistant 17. In a network environment in which the communications network 160 is the Internet, for example, the servers 10a, 10b can be

Web servers with which the clients 110a, 110b, 110c ~~20~~ communicate via any of a number of known protocols, such as, hypertext transfer protocol (HTTP) or wireless application protocol (WAP). Each client computer 110a, 110b, 110c ~~20~~ can be equipped with browser 180a to gain access to the servers 10a, 10b. Similarly, personal digital assistant 17 can be equipped with browser 180b and mobile phone 15 can be equipped with browser 180c to display and receive various data.

[0035] In operation, a user (not shown) may interact with a computing application running on a client computing devices to monitor through the use of micro-monitor cooperating database environments. The reports may be stored on server computers and communicated to cooperating users through client computing devices over communications network 14 ~~160~~. A user may monitor and manage data environments by interfacing with computing applications on client computing devices. The operations surrounding monitoring may be communicated by client computing devices to server computers for processing and storage. Server computers may host computing applications to facilitate the monitoring of data environments.

[0040] Figure 3 shows a system diagram of an exemplary database environment operating a micro-monitor in accordance with the herein described systems and methods. As shown exemplary database environment 300 comprises DB Server1 maintaining Data Store 1, DB Server2 maintaining Data Store 2, and DB Server3 maintaining Data Store 3~~[[,]]~~ ~~DB Server4 maintaining Data Store 4~~, communications network 14, Applications, and Administrator Client executing micro-monitor computing application 310. In operation, data for use by Applications 320 is communicated among any of DB Servers 1, 2, or 3~~[[,]]~~ ~~or 4~~ across communications network 14 to Applications 320 ~~14~~. It is appreciated that Applications 320 may operate on a various computing environments as indicated by the Applications residing computer server figure having a dashed outline.

[0041] Micro-monitor application 310 operating on Administrator Client communicates with DB Servers 1, 2, and 3~~[[,]]~~ ~~and 4~~ over communications network 14 to obtain monitoring database operational information for processing to generate monitoring information. DB Servers 1, 2, and 3 ~~and 3~~, maintaining Data Store 1, 2, and 3~~[[,]]~~ ~~and 4~~ together form a single database being housed over four distinct computing environments. In this context, micro-monitor 310 operates to monitor the resulting distributed database (or in

an alternative contemplated implementation, a replicated database) comprised of Data Stores 1, 2, and 3[[,]] ~~and 4~~. In addition to communicating with Data Stores 1, 2, and 3[[,]] ~~and 4~~, micro-monitor application 310 cooperates with the any underlying computing environment operating environment operating on DB Servers 1, 2, and 3[[,]] ~~and 4~~ on which Data Stores 1, 2, and 3[[,]] ~~and 4~~ operate.

[0044] Display areas 410, 420, 430 ~~420~~ and 450 may be configured to display a plethora of monitoring information. In the provided exemplary illustrative implementation, display area 410 is configured to display the information about the date and time of the last message received from the database environments being monitored. Display area 430, is configured to display the number of errors and warnings encountered during monitoring. Display area 420 is configured to provide a graphical display which indicates by color (not shown), and through the display of various graphics the operational state of the monitored database environments. In this context, if an error is encountered by the monitored database environment, display area may display a red graphic showing the number of the database server and/or data store on which the error occurs. Display area 450, shown as the largest, provides operational information about the database environments being observed. In the provided exemplary illustrative implementation, display area 450 is used to display error-type information about a cooperating database environment (not shown) being observed.

[0046] Figure 4A is a screen shot of a conventional computing environment display area wherein a micro-monitor is being executed. As is shown in Figure 4A, conventional computing environment display area 485 ~~480~~ comprises, for exemplary purposes, a word processing application. Micro-monitor 400 in full execution mode comprises but a fraction of the total available display area provided by a convention computing environment display area 485 ~~480~~. The small form factor of micro-monitor 400 allows participating users (not shown) to operate other computing applications whilst performing the all important task of monitoring.

[0047] Figure 5 is a screen shot of an exemplary monitoring application 500. As described in Figure 4, micro-monitor 400 (not shown) may operate to expand into a conventional sized monitoring application 500. As is shown in Figure 5, monitoring application 500 comprises graphical user interface 505 having display areas 510, 520, controls 530, and content 515 ~~520~~ and 525. In the provided exemplary illustrative

implementation, display area 520 comprises control content 515 ~~520~~ which allows participating users (not shown) the ability to navigate through cooperating database environments (not shown). In operation, when micro-monitor 400 (not shown) is expanded into conventional sized monitoring application 500, the data populated in micro-monitor 400 (not shown) is populated in monitoring application 500 in display areas 510 and 520. The mapping of the content may be pre-configured such that content found in display area 430 (not shown) of micro-monitor 400 (not shown) may map to the content 525 of display area 520. Similarly, content found in display area 450 (not shown) may also map to content 525 of display area 520. Likewise controls 490 (not shown) may map to control content 515 ~~520~~ of display area 510. Controls 530 may be employed to navigate and manage content 515 ~~520~~ and 525 of display areas 510, and 520, respectively.

[0048] Figure 6 is a flow diagram of the processing performed when executing, configuring, and operating an exemplary micro-monitor. As shown, processing begins at block 600 and proceeds to block 605 where the customization settings for the micro-monitor are provided. Customization/configuration settings may comprise the location of micro-monitor display areas, and controls. Processing then proceeds to block 610 where the micro-monitor is configured according to the provided configuration settings. The micro-monitor then communicates with the cooperating database environments at block 615 to obtain the data required for monitoring. A check is then performed to determine if the changes to the database environment were received by the micro-monitor. If at block 625, it is determined that changes have been made, processing proceeds to block 630 where the received changes are made. If, however, at block 625 it is determined that there are no changes, processing reverts to block 615 and proceeds there from to display data 620.